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ABSTRACT

A study was undertaken at California's College of the Canyons to determine outcomes for students who challenged course prerequisites and enrolled in courses requiring placement levels higher than recommended between spring 1993 and fall 1994. Data were gathered from analyses of 529 placement/prerequisite waiver forms and transcripts from 445 students who had challenged a mathematics or English prerequisite. The sample included 203 students who had challenged math prerequisites and 242 who had challenged English prerequisites. Among the mathematics students, 154 actually attempted the mathematics course and 39.6% received a passing grade of C or higher. Among the students challenging English prerequisites, 162 attempted the English course and 48.8% received a grade of C or higher. The results indicate that since mathematics courses are more sequential in nature, students are less likely to succeed without the suggested prerequisites. Future research is recommended to compare the success rates of students attempting a course with and without the recommended prerequisites. (AJL)

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ED 401 976

MATRICULATION PROJECT

PREREQUISITE CHALLENGES

by

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U.S. DEPARTMENT OF EDUCATION
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Prerequisites are an important part of the community college curriculum because they improve student retention and increase student success rates. They help insure that students have the necessary knowledge and skills to succeed in a course. Although matriculation regulations allow the governing board of a community college district to establish prerequisites, the regulations also require that a relationship be demonstrated between a course and its respective prerequisite before implementing a mandatory prerequisite requirement. In the Model District Policy, the task force formed by the Chancellor's Office states, " . . . the board recognizes that it is as important to have prerequisites in place where they are a vital factor in maintaining academic standards as it is to avoid establishing prerequisites where they are not needed." For these reasons, California State Matriculation Regulations require that colleges validate any prerequisite as being *necessary for the success of a student* in a course. The regulations also require that the validation procedure " . . . ensures that a student who has not met the prerequisite is *highly unlikely* to obtain a satisfactory grade in a course for which the prerequisite is being established" [58106(e)]. The interpretation of *highly unlikely* must be based on empirical data collected using sound research practices.

Matriculation regulations [55201(f)] also specify that " . . . any prerequisite may be challenged by a student." To adhere to this regulation, in Spring 1992 College of the Canyons established a challenge process by which students are able to waive a prerequisite and to enroll in a course which requires a placement level higher than is recommended to the student. Because prerequisites had not been established in accordance with the College's process for establishing prerequisites, the waiver procedure was a causal one. Between Spring 1993 and Fall 1994, the process produced an outcome similar to that of suspending prerequisites; that is, the students were not required to complete a formal challenge procedure

to enter a course without satisfying the prerequisite for the course. The data gathered during this period presented a great opportunity for a research project dealing with the validation of some prerequisites.

The purpose of this paper is to provide data on students who challenged a prerequisite during the period Spring 1993 through Fall 1994. The research questions to be answered are: Of the students who challenged a prerequisite between Spring 1993 and Fall 1994, how many received successful grades of A, B, C, or Credit in their courses? Were students with some types of challenges more successful than others?

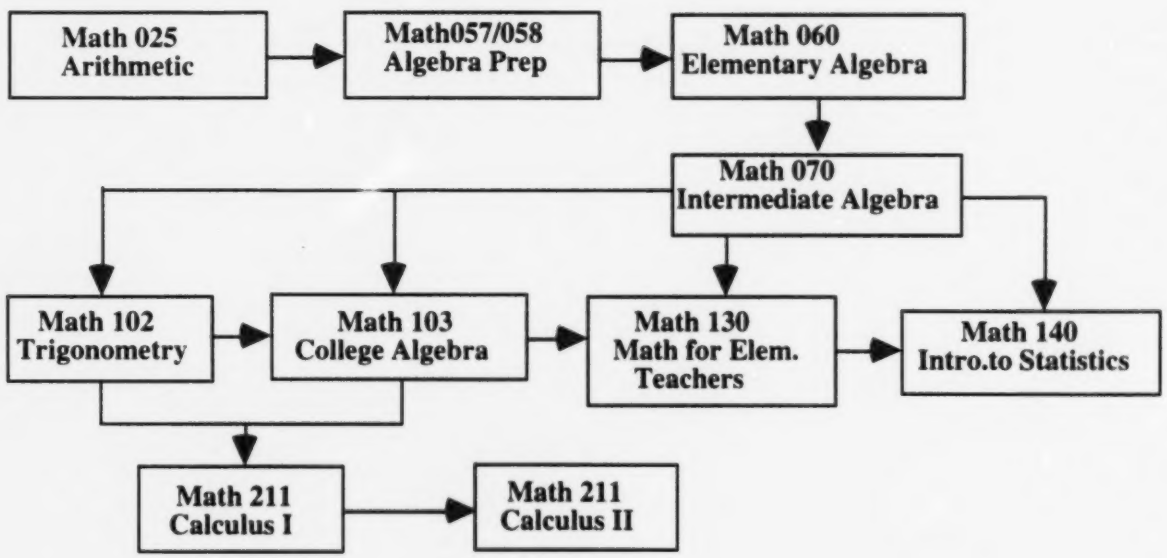
The data gathered for this study included 529 Matriculation Placement/Prerequisite Waiver forms which students had completed prior to registering for the courses which they were challenging. The data also included 488 transcripts of those students who completed the forms. The remaining forty-one students were not found in the College's data base. Of the 488 students who did have historical files at the College, 445 had challenged a math or English prerequisite. The remaining 43 students had filled the waiver to challenge other courses including Speech 105, Business 101, Business 102, Accounting 101, Business 144, Chemistry 201, 255, 151, and French 102. Sample sizes for these courses were not large enough to include in this study. Therefore, this study only includes the 445 students who had completed a waiver to challenge a math or English course.

The following pages display the results of a comprehensive analysis of 445 students who challenged a prerequisite in math or English during Spring 1993 through Fall 1994.

Courses Challenged in Math :

Math 025 - Arithmetic
Math 057/058 - Algebra Preparation
Math 060 - Elementary Algebra
Math 070 - Intermediate Algebra
Math 102 - Trigonometry
Math 103 - College Algebra
Math 130 - Math for Elem. Teachers
Math 140 - Statistics
Math 211 - Calculus I
Math 212 - Calculus II

Mathematics Course Sequence :



English Courses Challenged :

English 034 - Reading Skills
English 035 - Sentence Writing
English 080 - Introduction to Literature
English 090 - Writing Skills
English 101 - English Composition and Literature

English Course Sequence :

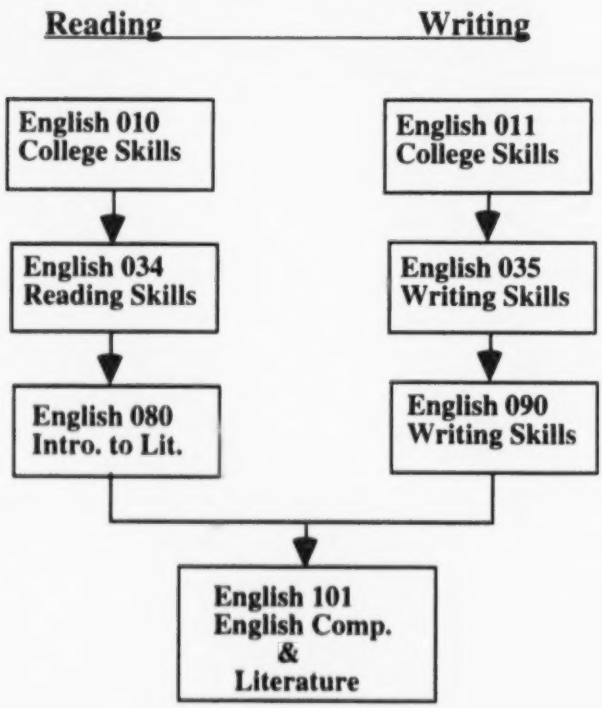


Figure 1 provides the percent of students who challenged a prerequisite by course-type. There were 203 students who challenged a math prerequisite and 242 students who challenged an English prerequisite.

Figure 1

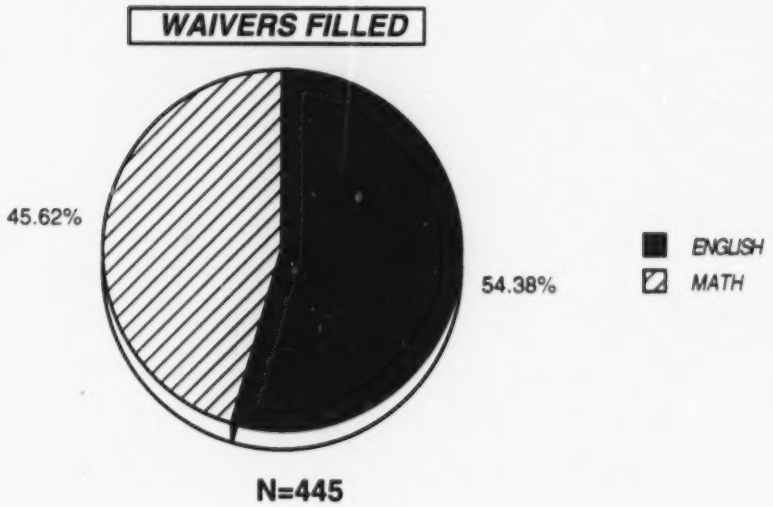
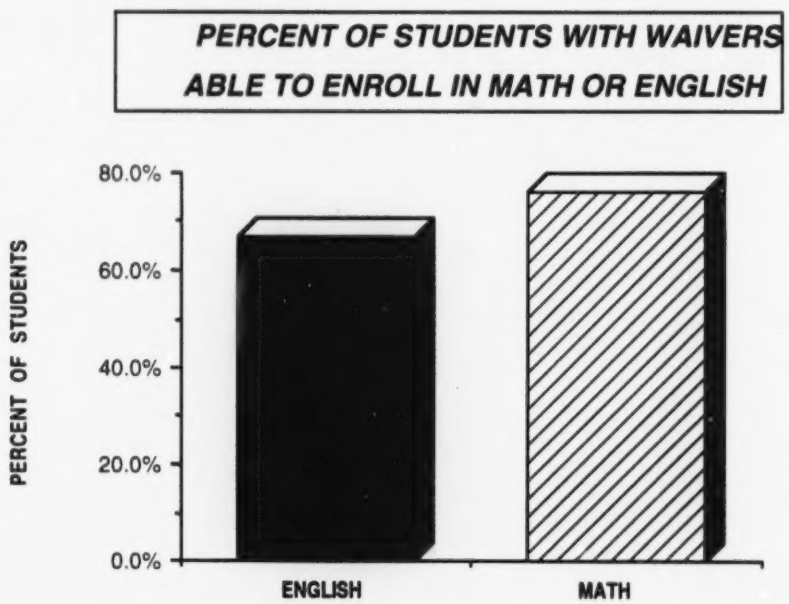


Figure 2 compares the rates of outcome course enrollment in math and English for students without the proper prerequisites. Of the students who challenged a math prerequisite, 75.9% were able to enroll in the outcome course in which they opted to be. Of the students who challenged an English prerequisite, 66.9% were able to enroll in the outcome course. Of the students who challenged a prerequisite in math, 154 attempted an outcome course without the prerequisites. Of the students who challenged a prerequisite in English, 162 attempted an outcome course without the prerequisites. Four students chose to follow the English placement recommendations and enrolled in the courses which are prerequisites for the outcome courses that they were challenging.

Figure 2



A total of 203 students challenged a math prerequisite. Of those students, 61 received successful grades of A, B, C, or Credit in the outcome courses. Figure 3 provides the number of students who completed a challenge form , the number of students who enrolled in the outcome courses, and the number of those students who successfully completed the courses. Table 1 provides the actual numbers per course.

Figure 3

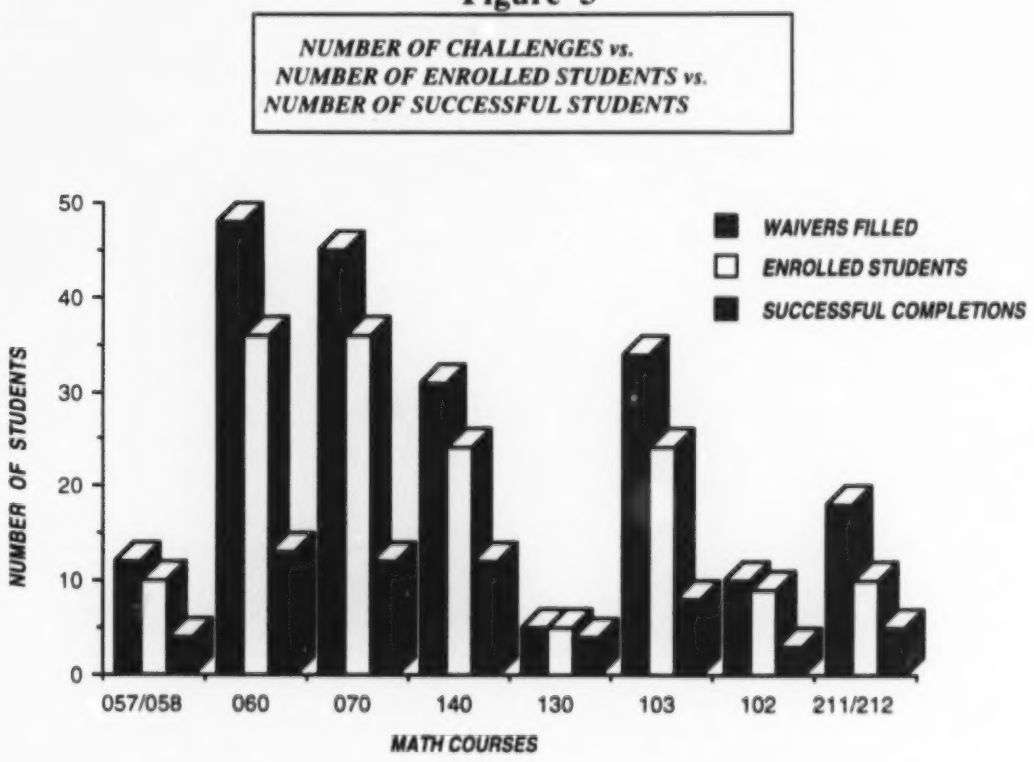
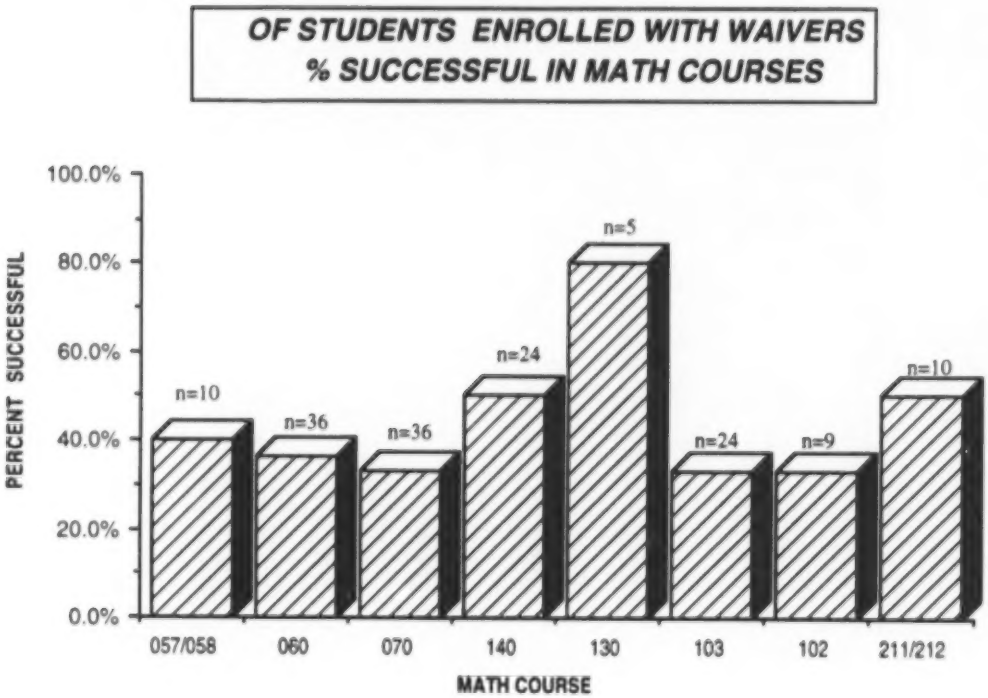


Table 1

	057/058	060	070	140	130	103	102	211/212
Number Challenging Prerequisite	12	48	45	31	5	34	10	18
Number Enrolled in Course	10	36	36	24	5	24	9	10
Number Successfully Completing Course	4	13	12	12	4	8	3	5

Figure 4 shows the rates of success by course for students who challenged a prerequisite in math (*Rate = number of successful students ÷ number of enrolled students).*

Figure 4



A total of 242 students challenged an English prerequisite. Of those students, 79 received successful grades of A, B, C, or Credit in the outcome courses. Figure 5 provides the number of students who completed a challenge form and the number of those students who were successful in the outcome courses. Table 2 shows the actual frequencies per course.

Figure 5

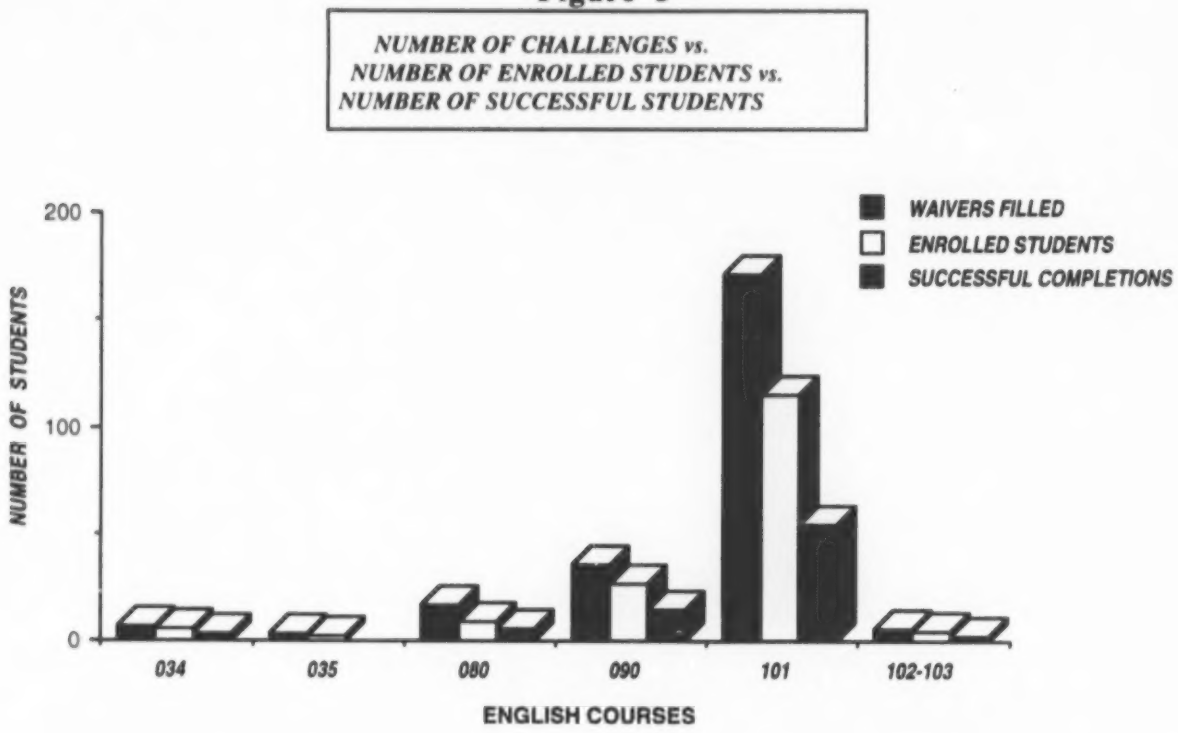


Table 2

	034	035	080	090	101	102/103
Number Challenging Prerequisite	7	3	17	35	171	5
Number Enrolled in Course	5	2	9	27	105	4
Number Successfully Completing Course	3	0	6	14	54	2

Figure 6 represents the rates of success by course for students who challenged an English prerequisite.

Figure 6

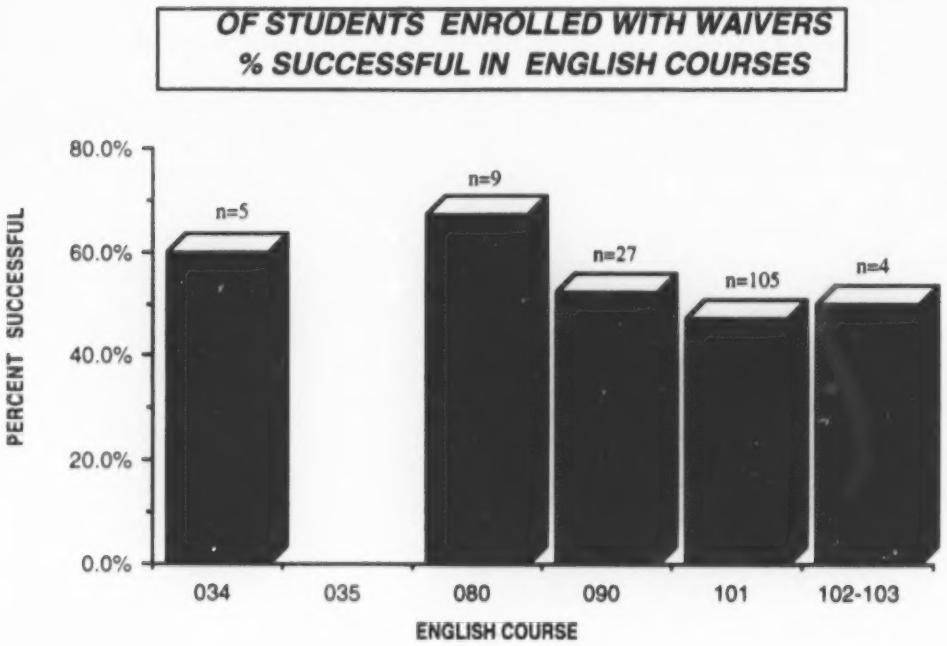


Table 3

Number of Successful Students Without Prerequisites
A Comparison Between English and Math

Population	Number of Students Challenging Course	Number of Students Enrolled in Course	Number of Successful Completions	Percent Successful
English	238	162	79	48.8%
Math	203	154	61	39.6%

A test of the claim that the two populations have the same proportion of successful students resulted in the following:

$$t = -1.65 \qquad p - value < 0.05 \qquad df = 314$$

The observed difference in the proportion of successful students without prerequisites between the two groups is significant at the 0.05 level. This result supports the hypothesis that math/science courses are more sequential in nature than humanities courses; therefore, students are less likely to succeed without the suggested prerequisites.

LIMITATIONS

There were 125 students who asked for waivers in math and English courses who did not enroll in those classes. The transcripts of students who drop a course within the first two weeks of a semester do not provide any information regarding their enrollment in the particular course. Some of these students may have enrolled in an outcome course and dropped within the first two weeks of the semester realizing that they would be unable to succeed in the course. These students would have been considered as nonsuccessful in completing the outcome courses, thus increasing the sample sizes of the nonsuccessful groups.

A second limitation may be the content mastery expectation by different instructors in an outcome course. Another limitation may be the grading standards among faculty of the outcome course.

DISCUSSION

Eventhough the only purpose of this study was to examine the number of students who challenged a prerequisite using the waiver forms, some interesting information was revealed in the outcomes. As noted earlier, 41 of the 529 students who filled the challenge forms were not found in the COC data base. This would indicate that these students were never enrolled at COC; yet they were permitted to complete challenge forms. Assuming these students were unable to enroll because courses were unavailable, should they have consumed valuable counseling time challenging a prerequisite? Admissions, counseling, and faculty may want to examine the timing of the prerequisite challenge process to determine maximum efficiency and to avoid unnecessary paper-work. These groups may want to discuss whether or not the College should grant prerequisite waivers to students if no space is available for students to enroll. Also, if the College decides to grant prerequisite waivers independent of availability of courses, should the waiver be honored in following semesters?

FUTURE RESEARCH

Future research is needed to compare the success rates of students attempting a course with and without the appropriate prerequisites. The differences may not be significant, in which case, faculty would need to reexamine the exit skills of the prerequisite course.